



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,882	04/17/2004	Eric T. Martin	200210133-1	8610
22879	7590	11/25/2005	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			DEB, ANJAN K	
			ART UNIT	PAPER NUMBER
			2858	

DATE MAILED: 11/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/825,882	Applicant(s) MARTIN ET AL.	
	Examiner Anjan K. Deb	Art Unit 2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23-28 is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-10, 12-20, 22, are rejected under 35 U.S.C. 102(b) as being anticipated by Staple et al. (US 6,750,655 B2).

Re claim 1, 19 Staple discloses system and method comprising micro-electromechanical (MEM) device assemblies (614)(Fig. 6A,B) capable of individually written to (charging capacitor C<sup>(1)</sup> of each MEM being driven by driver 604), and testing device (AC Detector)(612)(Fig. 6A) for testing device assembly for proper operation (affirming switched status of MEM-based devices) (continuity sensing)(column 6 line 43 to column 7 line 6)(column 8 lines 44-49) without directly reading the MEM device of the MEM device assemblies (614)(column 8 lines 1-48). Regarding the limitation “MEM device.....incapable of being electrically read” examiner believes any electrical device can be read electrically by attaching a sensor to the device. Therefore, a MEM device incapable of being read is absolutely not true. For examination purpose, examiner considers “MEM device.....incapable of being electrically read” as a MEM device that does include a separate sensor (detector) connected to each MEM device for electrically reading the MEM device.

Re claim 2, 20 Staple discloses testing mechanism is capable of verifying that an electrical path exists (continuity sensing)(column 6 line 43 to column 7 line 6).

Re claims 4, 5, Staple discloses first switch (driver)(604) coupling a column control signal to the MEM device 610 and a second switch 618 coupling a clear voltage to the MEM device wherein each of the first and second switch is a transistor.

Re claims 6,7, 18, 22 Staple discloses light modulation MEM device (optical attenuators, switches, signal modulators) used in projection system (display devices) (column 8 lines 50-57).

Re claims 3, 8-10, 17 Staple discloses row and column control mechanism comprising driver 604, and transistor 618 (column 7 line 54 to column 8 line 50).

Re claims 12-16, Staple discloses system comprising an array of nodes organized into rows and columns, each node having a micro-electromechanical (MEM) device incapable of being electrically read, a first switch (driver) coupling a column line to the MEM device and a second switch (618) coupling a clear voltage to the MEM device, and a testing mechanism (612) situated outside of the array of nodes to test each node for proper operation by selecting a row and a column of the nodes in which the node is located to turn on the first and the second switches of the node and by verifying that an electrical path exists (continuity sensing)(column 6 line 43 to column 7 line 6, column 8 lines 23-49) from the column, and through the first (driver) and the second switches (618), to the clear voltage. Digital driver 604 is broadly

interpreted as a first switch because it is used to selectively turn on high an electrode of MEM device 614.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Staple et al. (US 6,750,655 B2) in view of Montrose (US 20040257086 A1).

Re claim 11, Staple disclosed all of the claimed limitations as stated above except a multiplexer.

Montrose discloses test circuit for MEM device comprising multiplexer 70 configured to provide the analog readback to a corresponding activation driver or switch driver (para 0008) (Fig. 2).

At the time the invention was made it would have been obvious for one of ordinary skill in the art to modify Staple by adding multiplexer disclosed by Montrose to provide the analog readback to a corresponding activation driver or switch driver.

5. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Staple et al. (US 6,750,655 B2) in view of Martin (US 20040218334).

Re claim 21 Staple discloses all of the claimed limitations including charging a column of the array of MEM device 610, situating a testing device 612 outside array of nodes comprising MEM device 610, verifying proper operation of one MEM device, source of second transistor 618 connected to clear voltage (MEM select state is off)(capacitor 614,616 voltage) except turning off one or more columns of the array of MEM device assemblies, and verifying one or more columns of the array properly discharged the charge.

Martin discloses MEM devices, for light modulator array utilizing diffraction-based digital light devices (DLDs), comprising first 62 and second 64 transistor for controlling MEM devices using a variable capacitor to modulate light, wherein each update cycle requires draining a charge (discharged the charge) based on control data of a prior update cycle from the MEM device to place the MEM device in a known charge state before adding an appropriate charge based on control data of a present update cycle (para 0005) (Fig. 2).

At the time the invention was made it would have been obvious for one of ordinary skill in the art to modify Staple by adding a first transistor disclosed by Martin and having the first transistor source connected to column of the array and having the drain of the second transistor connected to drain of second transistor of the MEM device as required for draining a charge based on control data of a prior update cycle from the MEM device to place the MEM device in a known charge state before adding an appropriate charge based on control data of a present update cycle for properly controlling the MEM device in digital light devices (DLDs) application as disclosed by Martin.

*Allowable Subject Matter*

6. Claims 23-28 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: Claims 23-28 are allowed for the inclusion of a source of the first transistor of each MEM device assembly is connected to a column of the array, a drain of the first transistor of the MEM device assembly is connected to a drain of the second transistor of the MEM device assembly, and a source of the second transistor of the MEM assembly is connected to the clear voltage. The above limitations in combination with remaining claims limitations is neither disclosed nor suggested in the prior art.

*Response to Argument*

7. In response to applicant's arguments that the MEM devices of Staple as being capable of being read, examiner believes any electrical device can be read electrically by attaching a sensor to the device. Therefore, a MEM device incapable of being read is absolutely not true. For examination purpose examiner considers "MEM device.....incapable of being electrically read" as a MEM device that does include a sensor (detector) connected to it for electrically reading the MEM device. This feature is disclosed by Staple and acknowledged by applicant (applicant's remarks page 15, "in some embodiments, a detector may be provided to indicate whether the first and second regions are so coupled electrically") therefore Staple discloses in some embodiments a detector (sensor) is not

required to be connected to each MEM device for determining the state of the MEM device. This feature is clearly shown in Fig. 6A of Staple wherein a testing mechanism comprising a sensor (detector) 612 is situated outside of the array of MEM device assemblies to test each MEM device assembly for proper operation without directly reading the MEM device assembly.

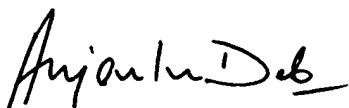
**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.



Art Unit: 2858

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Anjan K. Deb whose telephone number is 571-272-2228. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached at 571-272-2399.



**Anjan K. Deb**

Primary Patent Examiner

Art Unit: 2858

11/22/05

Tel: 571-272-2228

E-mail : [anjan.deb@uspto.gov](mailto:anjan.deb@uspto.gov)